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AMZ-103: Sidewalk Architecture & Infrastructure

SILICON LABS

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Business Development Engineer

Agenda

- **Architecture**
  - How it Works
  - Device Specifics
- **Infrastructure**
  - Physical
  - Cloud
- **Chip Sets**
  - EFR32BG21
  - EFR32FG23
  - Secure Vault

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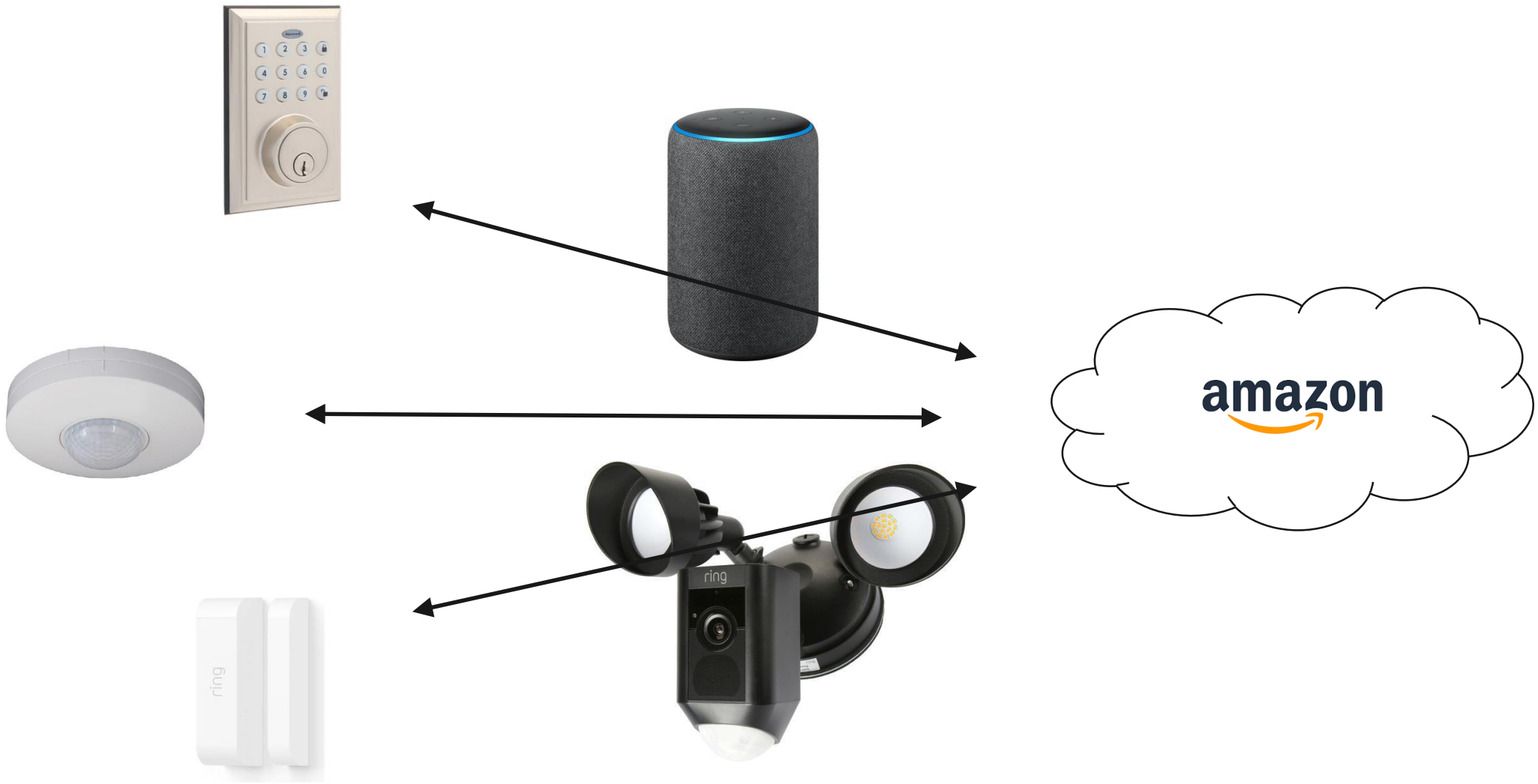
Architecture

How it Works



How it Works

How it Works

Device Specifics

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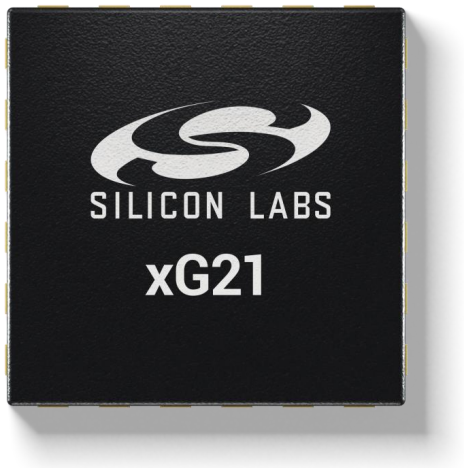

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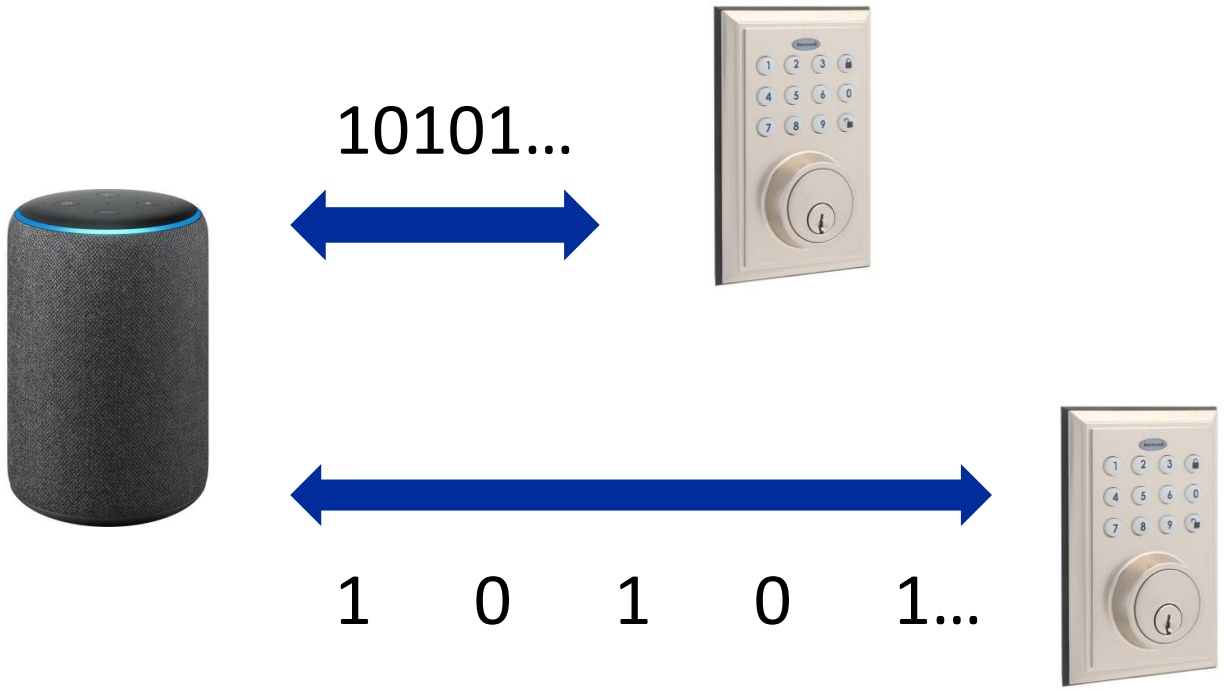
Customer Application		
Amazon Sidewalk Networking Layer		
Bluetooth*	Frequency Shift Keying (FSK)*	Chirp Spread Spectrum (CSS)*

Device Specifics

- **Bluetooth Low Energy (BLE)**
  - 2.4GHz
  - Ubiquitous
- **Frequency Shift Keying (FSK)**
  - 900-920 ISM band
  - Custom MAC/PHY
  - Data Rates (kbps)
    - 50
    - 150
    - 250
- **Chirp Spread Spectrum**
  - 900MHz ISM band



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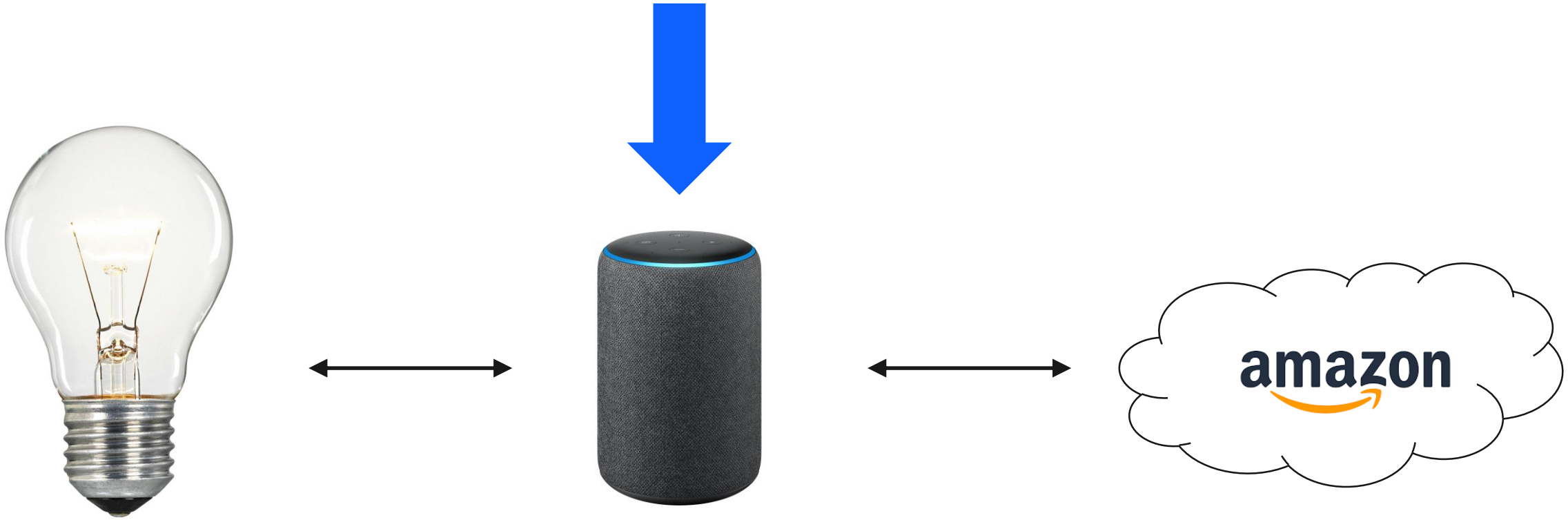
Infrastructure

Infrastructure



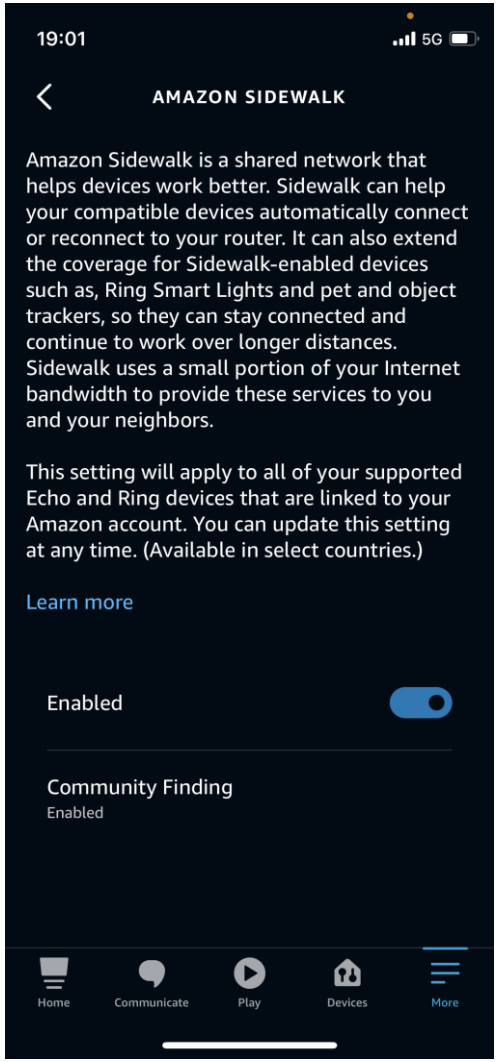
Physical Infrastructure - Amazon Sidewalk Bridges

- **BLE + 900MHz**
  - Echo (4th Gen)
  - Echo Show 10

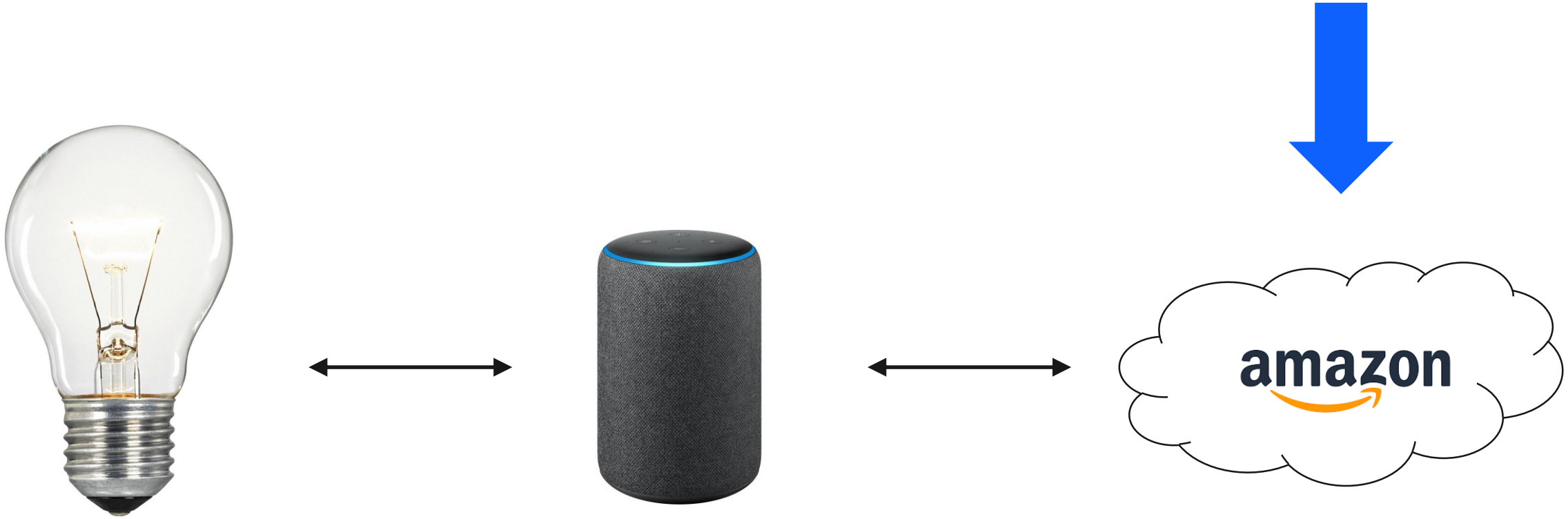
- **BLE-Only**
  - Echo (2nd Gen)
  - Echo (3rd Gen)
  - Echo (4th Gen)
  - Echo Dot (3rd Gen)
  - Echo Dot (4th Gen)
  - Echo Dot (4th Gen) for Kids
  - Echo Dot with Clock (4th Gen)
  - Echo Plus (1st Gen)
  - Echo Plus (2nd Gen)
  - Echo Show 5
  - Echo Show 8
  - Ring Video Doorbell Pro

- **900MHz-Only**
  - Ring Floodlight Cam
  - Ring Floodlight Cam Wired Plus
  - Ring Floodlight Cam Wired Pro
  - Ring Spotlight Cam Wired
  - Ring Spotlight Cam Mount

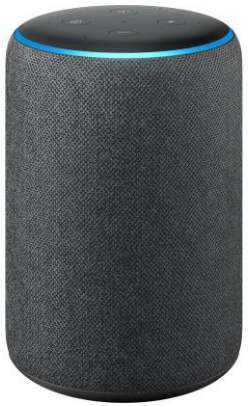
Existing Infrastructure



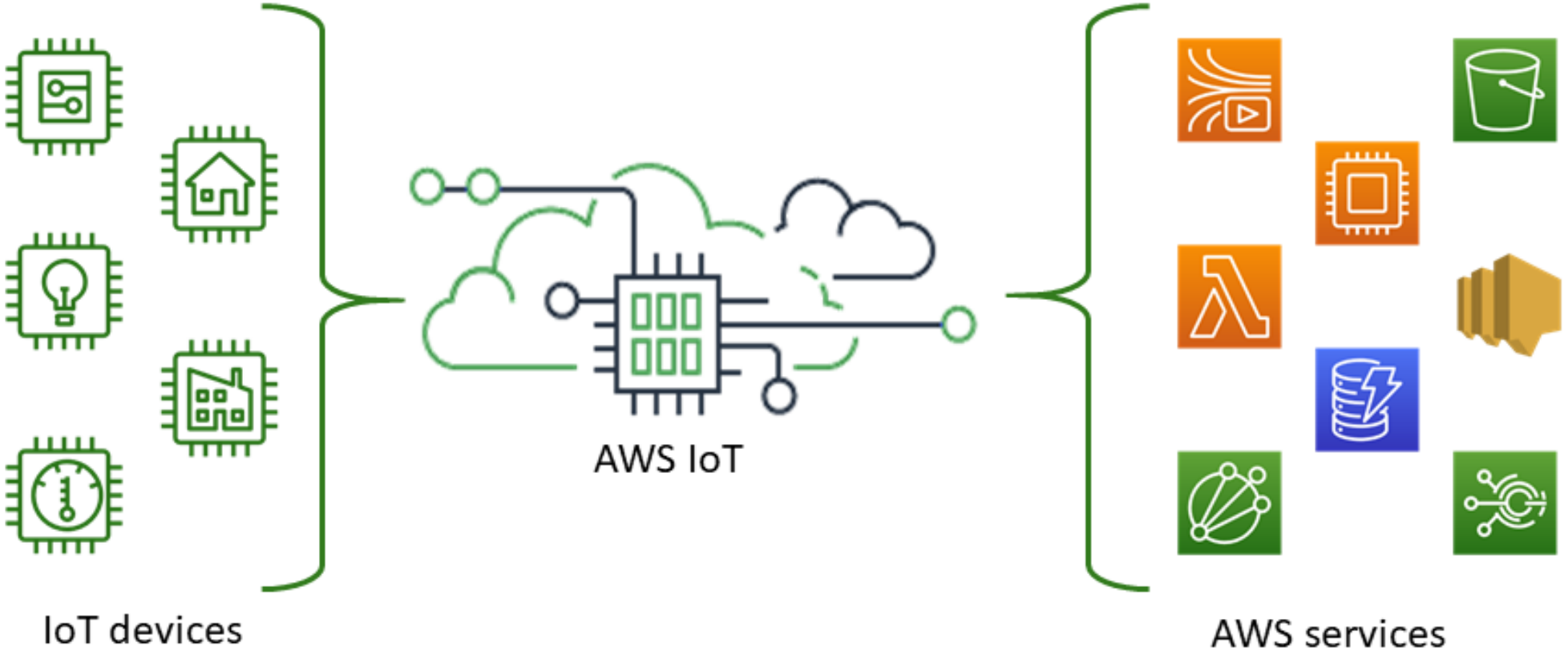
Infrastructure



Infrastructure



Infrastructure



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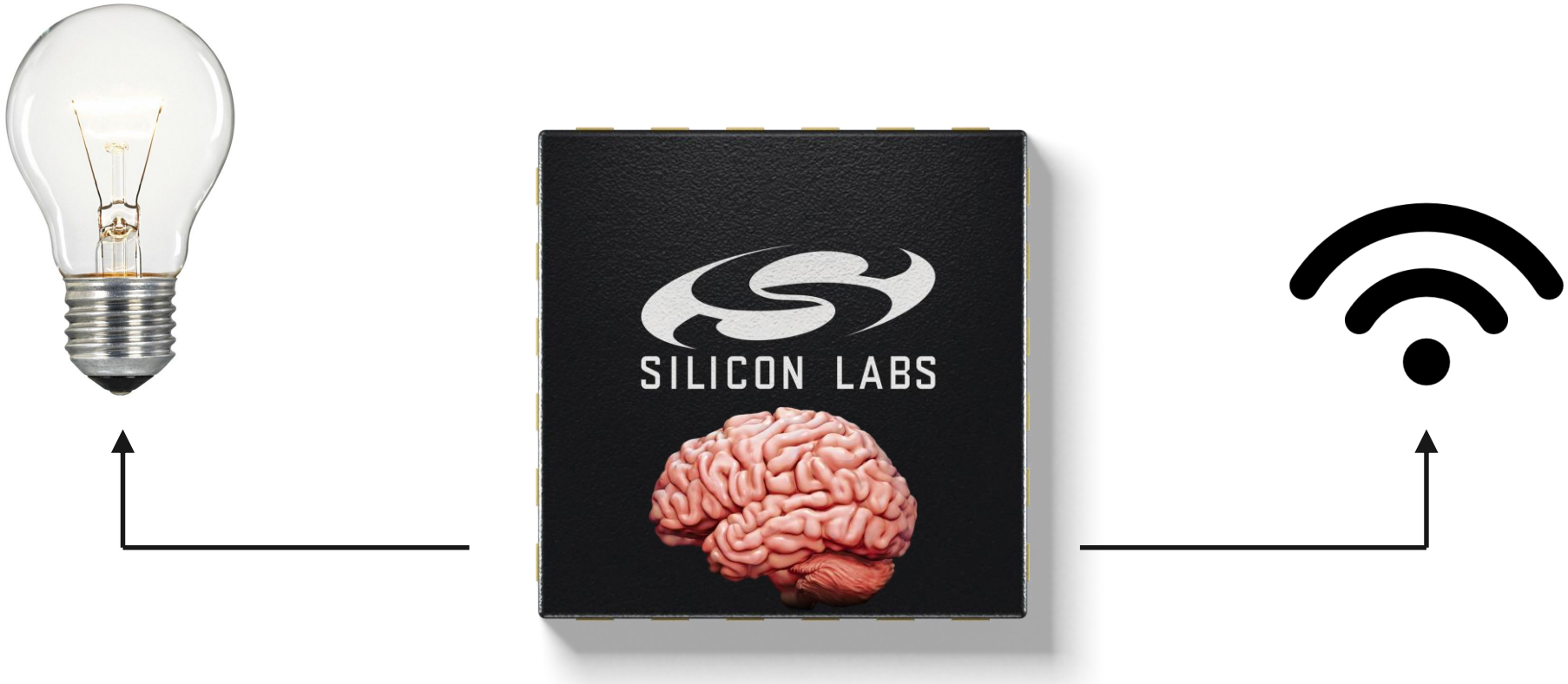
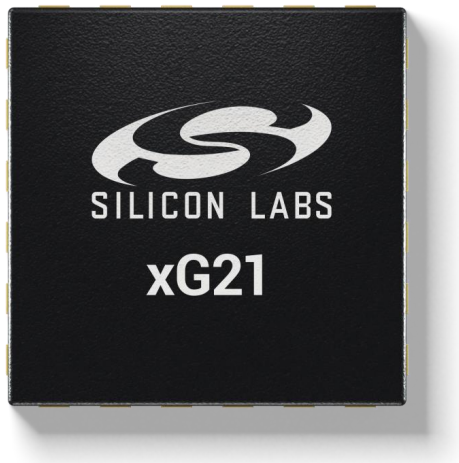
Silicon Labs Chipsets

System on Chip: Control, Compute, and Communication



EFR32BG21B: High-Security Bluetooth MCU SoC

Optimized



Enabling Next-Generation Connected Products

High-Performance Radio
Up to +20 dBm TX
-97.5 dBm RX @ BLE 1 Mbps
-105 dBm RX @ BLE 125 kbps
-104.5 dBm RX @ 15.4
Improved blocking performance

Low Active Current
33.8 mA TX @ +10 dBm
8.8 mA RX (BLE 1 Mbps)
63.8 µA/MHz

World Class Software
Zigbee 3.0
OpenThread 1.1/1.2
Bluetooth 5.2 (1M/2M/LR)
Bluetooth mesh 1.0
Dynamic multiprotocol

ARM® Cortex®-M33 with TrustZone®
80 MHz (FPU and DSP)
512-1024 kB of flash
64-96 kB of RAM

Security
SecureVault™ - Mid
SecureVault™ - High (select OPNs)

Peripherals
USART, I²C
12-bit ADC, ACMP

Compact Size
4x4 QFN32 (20 GPIO)

EFR32FG23B: High-Security Sub-GHz FSK MCU SoC

Range

Sub-GHz SoCs Optimized for Metering & Home/Industrial Automation Applications

High Performance Radio
Up to +20 dBm TX
-111 dBm RX @ 50 kbps GFSK
-125.6 dBm RX @ 4.8 kbps O-QPSK
RX Antenna Diversity

Low Power
25.9 mA TX @ +14 dBm
89 mA TX @ +20 dBm
4.3 mA RX (915 MHz, 50kbps)
26 µA/MHz
1.4 µA EM2 with 16 kB RAM
Preamble Sense

World Class Software
Z-Wave Mesh & Long Range
Wi-SUN*
WM-BUS
Amazon Sidewalk
Flex for Proprietary

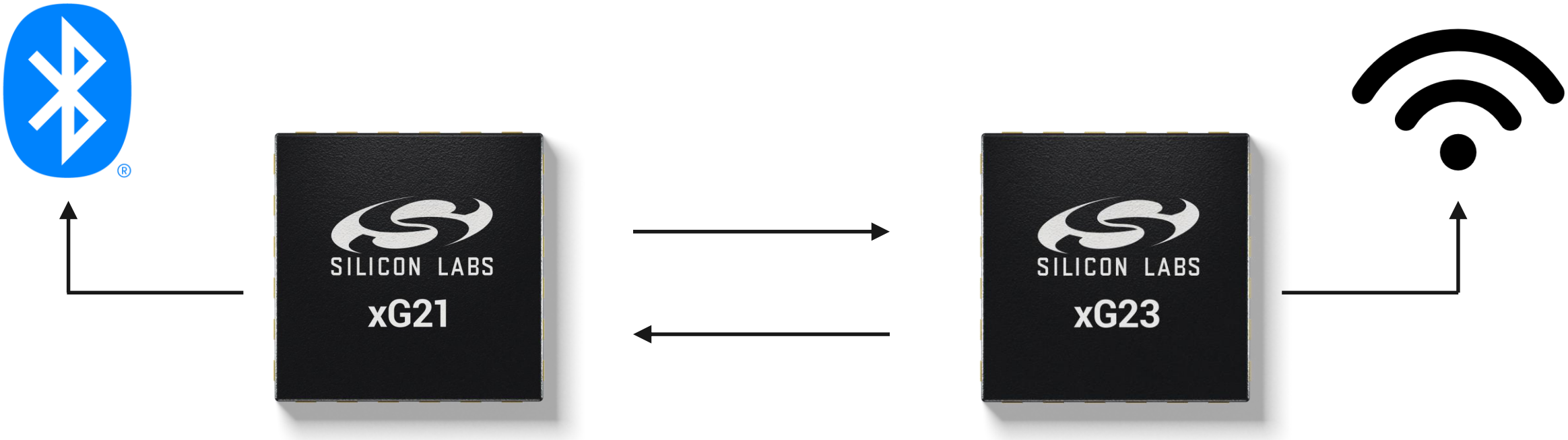
ARM® Cortex®-M33 with TrustZone®
78 MHz (FPU and DSP)
512kB of flash
64kB of RAM

Security
SecureVault™ - Mid
SecureVault™ - High (select OPNs)

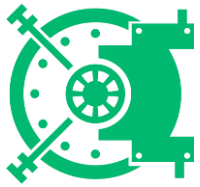
Low-power Peripherals
EUSART, USART, I²C
16-bit ADC, 12-bit VDAC, ACMP
20 x 4 LCD Controller
LESENSE, PCNT
Temperature sensor +/- 1.5°C

Compact Size
5x5 QFN40 (23 GPIO)
6x6 QFN48 (31 GPIO)

Can’t Decide? Why not Both?



Secure Vault



Feature	Basic	+Root of Trust	+Secure Element	Secure Vault
True Random Number Generator	✓	✓	✓	✓
Crypto Engine	✓	✓	✓	✓
Secure Boot	✓	✓	✓	✓
Secure Boot with RTSL	-	✓	✓	✓
ARM® TrustZone®	-	✓	✓	✓
Secure Debug with Lock/Unlock	-	✓	✓	✓
DPA Countermeasures	-	-	✓	✓
Anti-Tamper	-	-	-	✓
Secure Attestation	-	-	-	✓
Secure Key Management	-	-	-	✓
Advanced Crypto	-	-	-	✓
	Series 1 – xG1x	**Series 2 – xG22**	**Series 2 – xG21A**	**Series 2 – xG21B, xG23B**

Simplicity Studio

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Thank you!